

## Precalc Warm Up # 7-3

1. From a point 100 feet in front of a library, the angles of elevation to the base of a flagpole which is on top of the library and to the top of the pole are  $28^\circ$  and  $39^\circ 45'$  respectively. Find the height of the pole to the nearest foot.

Talk about #25 in your team.

25. A surveyor wishes to find the distance across a swamp (see figure). The bearing from  $A$  to  $B$  is  $N 32^\circ W$ . The surveyor walks 50 yards from  $A$ , and at the point  $C$  the bearing to  $B$  is  $N 68^\circ W$ . (a) Find the bearing from  $A$  to  $C$ . (b) Find the distance from  $A$  to  $B$ .

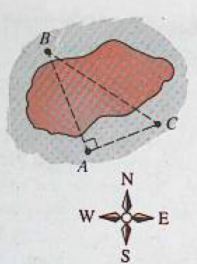
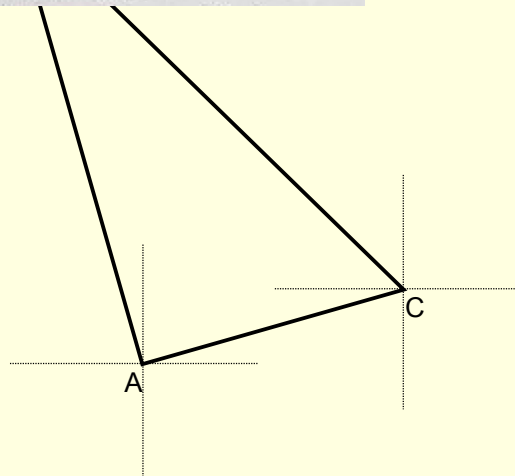


FIGURE FOR 25



25. A surveyor wishes to find the distance across a swamp (see figure). The bearing from  $A$  to  $B$  is  $N 32^\circ W$ . The surveyor walks 50 yards from  $A$ , and at the point  $C$  the bearing to  $B$  is  $N 68^\circ W$ . (a) Find the bearing from  $A$  to  $C$ . (b) Find the distance from  $A$  to  $B$ .

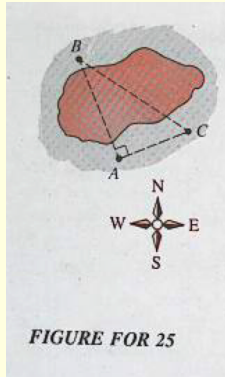
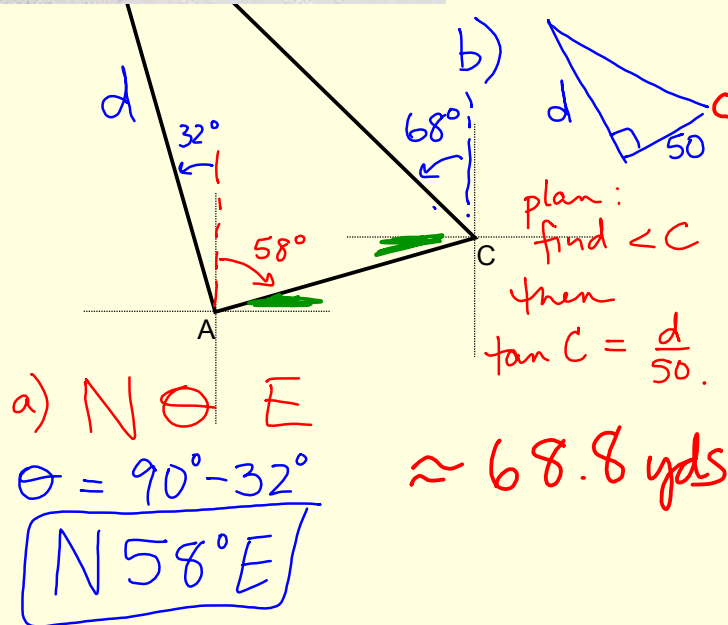


FIGURE FOR 25



### HW Questions: p. 390

In Exercises 1–10, solve the right triangle shown in the figure. (Round your answers to two decimal places.)

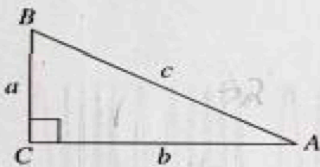
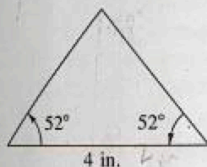


FIGURE FOR 1-10

5.  $A = 12^\circ 15'$ ,  $c = 430.5$

9.  $b = 16$ ,  $c = 52$

13. An isosceles triangle has two angles of  $52^\circ$  (see figure). The base of the triangle is 4 inches. Find the altitude of the triangle.



15. An amateur radio operator erects a 75-foot vertical tower for his antenna. Find the angle of elevation to the top of the tower at a point on level ground 50 feet from the base.

19. From a point 50 feet in front of a church, the angles of elevation to the base of the steeple and the top of the steeple are  $35^\circ$  and  $47^\circ 40'$ , respectively (see figure). Find the height of the steeple.

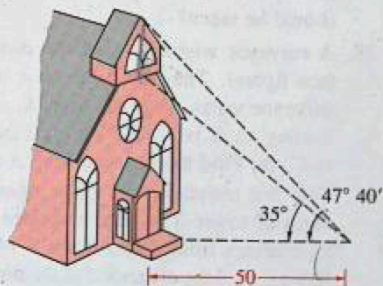
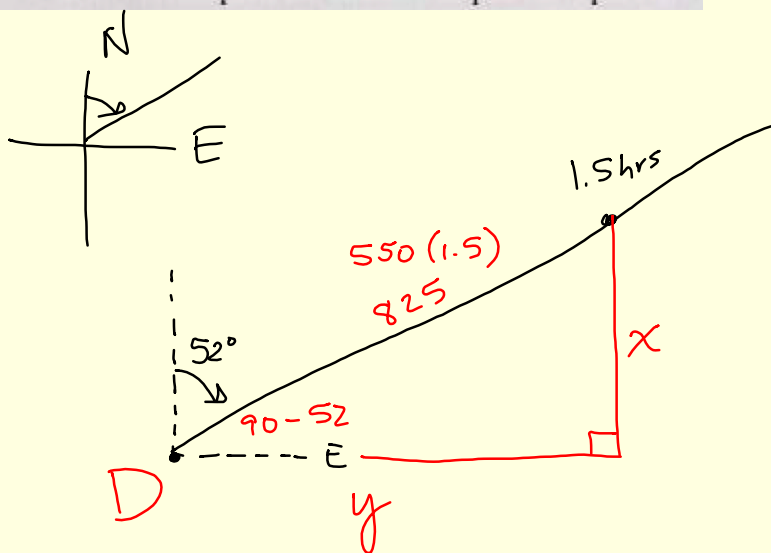


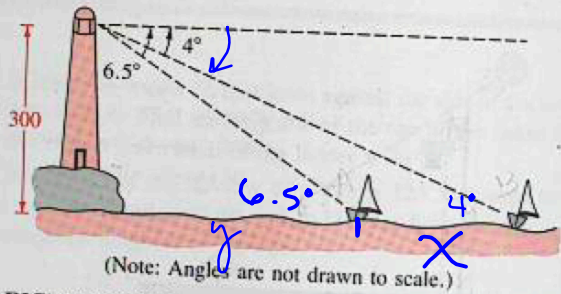
FIGURE FOR 19

21. An airplane flying at 550 miles per hour has a bearing of  $N 52^\circ E$ . After flying 1.5 hours, how far north and how far east has the plane traveled from its point of departure?



23. A ship is 45 miles east and 30 miles south of port. If the captain wants to travel directly to port, what bearing should be taken?

27. An observer in a lighthouse 300 feet above sea level spots two ships directly offshore. The angles of depression to the ships are  $4^\circ$  and  $6.5^\circ$  (see figure). How far apart are the ships?

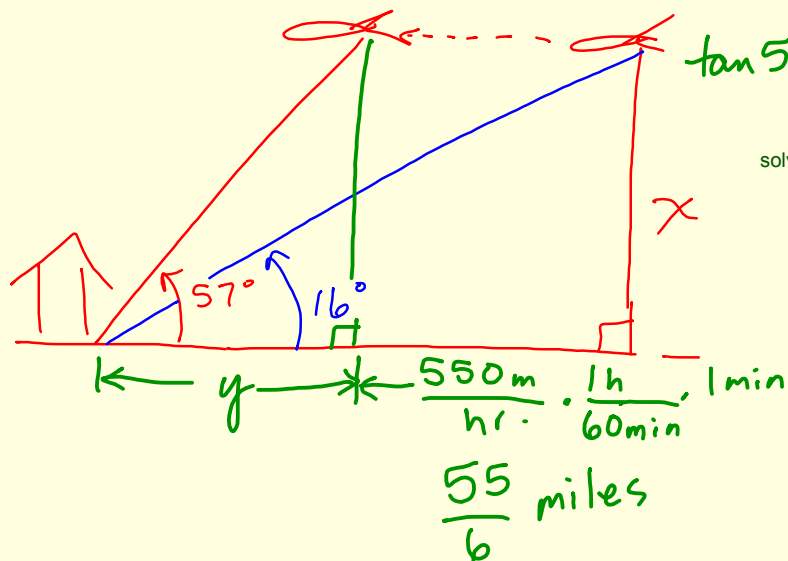


29. A plane is observed approaching your home, and you assume that it is traveling at approximately 550 miles per hour. If the angle of elevation of the plane is  $16^\circ$  at one time and one minute later the angle is  $57^\circ$ , approximate the altitude.

$$\tan 16^\circ = \frac{x}{y + \frac{55}{6}}$$

$$\tan 57^\circ = \frac{x}{y}$$

solve the system



33. Use the accompanying figure to find the distance  $y$  across the flat sides of the hexagonal nut as a function of  $r$ .

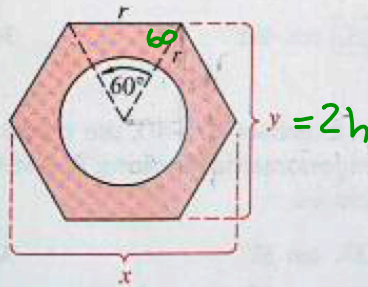
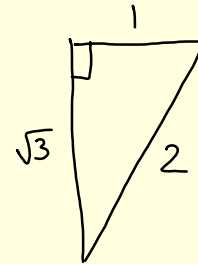


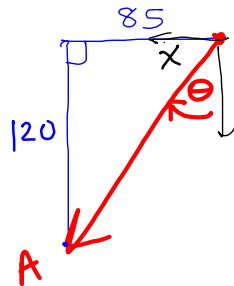
FIGURE FOR 33

Set up a proportion to find  $h$



Practice: A plane is 120 miles north and 85 miles east of an airport. If the pilot wants to fly directly to the airport, what bearing should be taken?

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$$\tan x = \frac{120}{85}$$

$$x = \tan^{-1}\left(\frac{120}{85}\right)$$

$$x \approx 54.7^\circ$$

$$\theta = 90 - x$$

S 35.3° W

Unit Test next Tuesday: PC 5 and SL 9

### Review

Make sure you have practiced those fun triangle problems from SL 9.1 and 9.7

Know what a radian is, and how to convert between radians and degrees.

DMS, Decimal degrees, Complementary, Supplementary

Angles in standard position, reference angles and how to use them.

Arc length and area of sector formulas

Be able to use the unit circle to find trig ratios

Be able to evaluate without a calculator

Know your exact triangles

Know how to use and prove the identities that we have learned so far

Be able to graph the trig functions and know amplitude, period, domain, range

Understand inverse trig functions, how to use them and where they are defined.

You should absolutely be able to solve word problems and **DRAW YOUR OWN PICTURES.**

Know bearing, and angle of elevation and depression



HW: PC book p. 394 boxed,  
and #1, 21, 33 (skip 63, 67)

Group Practice: Friday

Group Event: Monday  
(counts as quiz)

Individual Test Tuesday  
PC 5 and SL 9.1, 9.7